# PIRT Summary to the 2003 Legislature

# **Pesticide Incident Reporting and Tracking Review Panel**

# **Report on 2001 Incident Data**



Division of Environmental Health *March 2003* 

# Pesticide Incident Reporting and Tracking (PIRT) Review Panel

A report submitted by the Department of Health to the legislature as required by Chapter 380, Laws of 1989, and RCW 70.104.



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# **Data Summary**

Summaries for four state agencies Agriculture (WSDA), Health (DOH), Ecology, and Labor and Industries (L&I)) plus the Washington Poison Center (WPC) that respond to pesticide concerns are provided. In 2001, WSDA investigated 225 pesticide complaints, DOH responded to 200 incidents involving 250 individuals, L&I conducted 27 inspections concerning pesticide issues and received 129 claims involving pesticide exposures and the WPC registered 2,171 pesticide-related calls.

Table 1 lists the number of responses to pesticide-related incidents by each agency for the years 1993-2001. In addition, agency staff respond to inquiries and requests about pesticide issues that are not included in the total numbers.

There has been a clear downward trend

in incidents reported to the agencies and WPC and tracked by PIRT. Relative to 2000, there was an increase in the number of complaints investigated by WSDA. The number of DOH incidents, L&I claims and WPC calls declined.

Three pesticide issues brought before the PIRT panel in 2002 continue to be of concern in 2003:

- Worker medical monitoring of cholinesterase for agricultural mixers and loaders
- Closed systems for mixing and loading agricultural pesticides
- Potential increase in pesticide exposures due to mosquito control for West Nile Virus

Panel members identified an inadequacy in the L&I draft rule for worker medical monitoring of cholinesterase and recommended to L&I that the rule include 1) medical removal protection benefits for workers

Table 1 Pesticide Incidents Reported by Agency and WPC 1997-2001

1337 2001									
	1997	1998	1999	2000	2001				
WSDA Complaints	204	204	192	199	225				
Ecology Complaints*	49	74	•	63	35				
DOH Incidents	365	391	271	302	200				
Individual Cases	441	476	332	388	250				
L&I Inspections	20	36	37	34	27				
L&I Claims	235	269	183	180	129				
WPC Calls	3,227	3,002	2,523	2,326	2,171				

<sup>\*</sup>Ecology complaint data were not available for 1999

who are removed from pesticide handling if their cholinesterase levels drop below medical removal threshold levels and 2) systematic collection of monitoring data in a central repository for program evaluation purposes. WSDA and L&I abstained from comment on the recommendation.

#### Introduction

The PIRT Panel is directed by state statute (RCW 70.104.090) to monitor state agency response to pesticide consumer concerns, to identify inadequacies in pesticide regulations that result in insufficient protection of public health, and to produce an annual report summarizing pesticide incidents. The PIRT Panel consists of representatives from the Washington State Departments of Agriculture, Ecology, Health, Labor and Industries, Natural Resources (DNR), Fish and Wildlife (WDFW), as well as the University of Washington (UW), Washington State University (WSU), Washington Poison Center, plus a practicing toxicologist and a member of the public.

The following summarizes year 2001 pesticide incident data from four state agencies (Agriculture, Ecology, Health, and Labor and Industries) as well as the Washington Poison Center. A detailed report will be available later in 2003.

# **Department of Agriculture**

During 2001, WSDA investigated all 225 reported complaints made to the department regarding pesticide use, sales, distribution, applicator licensing, storage and building structure inspections for wood destroying organisms (WDO) (Table 2). After investigation, it was found that 152 (68%) involved pesticide applications and 67 (30%) were complaints unrelated to actual applications, such as licensing or structural inspections.

Table 2 WSDA Complaints And Violations 1993-2001

Year	Total Complaints	Violations Found
1993	400	166 (42%)
1994	383	138 (36%)
1995	259	87 (34%)
1996	251	104 (41%)
1997	204	110 (54%)
1998	204	116 (57%)
1999	192	101 (53%)
2000	199	121 (61%)
2001	225	152 (68%)

WSDA is required to respond to cases of human exposure within 24 hours of receipt. Investigation begins on other cases as soon as resources allow, generally within 2-3 days. In 2001, WSDA responded to 93 percent of all complaints and all 36 human exposure cases within 24 hours.

#### Location

One hundred fourteen (51%) of the 2001 complaint investigations occurred in eastern Washington; 111 (49%) were in western Washington. The counties reporting ten or more incidents were: King (21), Grant (20), Spokane (20), Yakima (18), Benton (13), Pierce (12), Lewis (11) and Thurston (10).

# Type of Activity Involved in Complaints

Table 3 shows the incidents with violations by type of activity from 1993 through 2001.

animal incidents (7), bee kills (3), water contamination (3), registration (3), storage (3), and miscellaneous (10). Children were involved directly or indirectly in 11 of the total 225 complaints.

When violations are evaluated by type of license involved, commercial applicators accounted for 34%, private applicators 16%, commercial consultants 9%, public operators 7%, unlicensed applicators 31% and others 3%, of the violations. WSDA licenses

Table 3 WSDA Violations by Type of Activity 1997 -2001

Activity	1997	1998	1999	2000	2001
Agricultural	40	54	50	48	63
Commercial/Industrial	22	22	19	33	27
PCO/WDO*	24	8	11	14	28
Residential	8	7	10	11	11
Right-of-Way**	10	12	1	8	8
Other (Licenses, records, etc)	6	13	10	7	15
Total Violations	110	116	101	121	152

## **Nature of Pesticide Complaint**

Drift exposure continues to be the most frequent complaint about applications. Drift complaints concern human exposure, property and other crops. In 2001, 56 complaints concerned drift, 36 complaints concerned human exposure (some resulting from drift), PCO/WDO inspections (27), licensing (21), records (20), misuse (19), direct spray (17),

more private applicators than any other type of license but commercial applicators tend to make more applications and have more contact with the public over larger areas.

# **Severity of Reported Complaints**

For the sixth year (2001), the majority (74%) had a low severity rating of two or less (Table 4).

Table 4 Severity Rating of WSDA Complaint Cases 1996-2001

Rating	1996	1997	1998	1999	2000	2001	Criteria
0	64	28	31	13	20	23	Problem not due to pesticides and/or no cause determined; PCO/WDO inspection with no violations
1	71	67	62	65	40	71	Pesticides involved, no residue, no symptoms occurred; possible pesticide problem, but not substantiated; issues involving records, registration, posting, notification (multiple chemical sensitivity) or licensing; DOH classified "unlikely" or "unknown"
2	79	64	70	72	89	72	Residue found, no health symptoms (human, animal); health symptoms not verified; multiple minor violations; off label use; worker protection violations; personal protective equipment violations with no health symptoms; plants with temporary or superficial damage only; PCO/WDO faulty inspections; DOH classified "possible."
ß	22	30	31	24	31	35	Minor short-term health symptoms (rash, eye irritation, shortness of breath, dizzy, nausea, vomiting); bee kills less than 25 hives; minor fish kills; economic plant damage under \$1000; evidence of deliberate economic fraud; DOH classified "probable."
4	11	8	9	15	17	20	Short-term veterinary or hospital care; bee kills over 25 hives; significant fish kills; significant economic plant damage (over \$1000); environmental damage; illness involving children; DOH classified "probable."
5	4	7	1	3	2	4	Veterinary or hospital care overnight or longer; physician diagnosed children's illness as caused by pesticides; animal death due to pesticides; significant environmental damage; DOH classified "definite."
6 <b>Total</b>	0 <b>251</b>	0 <b>204</b>	0 <b>204</b>	0 <b>192</b>	0 <b>199</b>	0 <b>225</b>	Human death due to pesticides.
i Otai	231	204	204	132	133	223	

## **Type of Pesticide Involved**

In 2001, herbicides were involved in 121 complaints (54%) and insecticides in 48 complaints (21%). This continues the decrease in the number of complaints involving insecticides and an increase in herbicide incidents compared to 1999 and 2000.

Other products such as fungicides, fumigants, growth regulators, miticides and rodenticides made up the rest of the incidents. Many cases involved tank mixes of several products.

The pesticides most frequently reported in complaints were 2,4-D (27),

glyphosate (18), triclopyr (10), azinphos-methyl (8), and dicamba (7). Insecticide use is changing rapidly with the cancellation of many previously registered uses and products.

#### **Enforcement Actions**

At the time of publication, the following corrective actions had been taken by the department: Notice of Correction (111), Notice of Intent (fines, license suspension) (37), Advisory Letter (4), Verbal Warning (3), Referred (2), and No Action Indicated (74). More than one action may be taken on an investigation as more than one individual may be involved.

# **WSDA Summary**

Complaint numbers were up slightly from 2000 but seem to be stabilizing at around 200 cases per year (down from over 500 cases per year when PIRT first began reporting).

Cancellation and/or decreased usage of some of the organophosphate insecticides could account for some of the decrease in insecticide complaints. Applicators are also more aware of conditions that might result in drift and are applying more targeted pesticides in lower volumes. Glyphosate drift and/or intentional neighbor-to-neighbor misuse

are a continual problem but generally do not result in health problems although there may be economic plant loss. Most human exposure cases appear to be due to preventable causes such as failure to observe wind direction, spraying when people are in the area, and overspray near roads.

The department investigated more Wood Destroying Organism complaints in 2001. More emphasis was placed on complying with the regulations after an initial learning period. Many WDO complaints could not be investigated in prior years because of the large amount of time that had elapsed between the inspection and the complaint. As the public has become more aware of the department's role in enforcement, complaints are being made on a timelier basis, allowing investigation.

# **Department of Labor and Industries**

L&I responds to concerns from workers exposed to pesticides through two divisions: the Washington Industrial Safety and Health Act (WISHA) Services Division, and the Insurance Services Division, Claims Administration Program. In 2001, L&I WISHA Services Division conducted 27 investigations involving pesticide handling and use complaints; 21 resulted in citations being issued against the employer. The Insurance

Services Division, Claims Administration Program received 129 claims relating to pesticide illness.

#### WISHA Service Division

In 2001, WISHA staff performed 27 pesticide-related safety and health investigations in the workplace; 21 in Eastern Washington and 6 in Western Washington. These investigations occurred in both agricultural and nonagricultural environments. Fourteen investigations involved orchards. The remaining included: seven farms (berries, wheat, potatoes), two lawn/shrub maintenance companies, two vineyards, one nursery, and one agricultural chemical supplier.

Eight of the 27 were employee or employee representative initiated complaints. Eleven investigations were the result of referrals from within the agency or from other state agencies. Six were scheduled inspections identified through the L&I scheduling list and two were follow-up inspections.

Violations were discovered in 21 of the 27 investigations (14 had monetary penalties). The following violations were most frequently cited:

- inadequate hazard communication program/training on pesticides
- 2) inadequate respirator program, fit test, medical evaluation
- inadequate Personal Protective Equipment (PPE) supplied, maintained and storage location

- 4) inadequate Accident Prevention Program (APP)
- 5) incomplete spray records and central posting to inform employees of pesticide applications
- 6) no emergency eyewash available
- 7) lack of worker protection standard (WPS) training
- 8) lack of appropriate field sanitation and labor camp requirements.

# L&I Claims Insurance Services Division, Claims Administration Program

The Insurances Services Division; Claims Administration Program, processes worker claims initiated by onthe-job injuries and illnesses including claims involving pesticides. As part of an inter-agency agreement, 129 pesticide claims were referred to DOH for further investigation in 2001. This is a 30 percent decrease in the number of pesticide claim referrals from 1999 (183) and 2000 (180).

In 2001, 80 (62%) claimants were exposed while working in agriculture and 49 (38%) were in a non-agricultural setting. The source of pesticide exposure for agricultural employees included residues (23), direct spray (21), and drift (18). Fifty-five claims involved workers in the fruit industry and 10 involved field crops.

After investigation of the 129 pesticiderelated claims, DOH classified 59 as having signs and/or symptoms definitely, probably or possibly related to pesticide exposure.

In 2001, 99 percent of all initial medical visits were paid. The claims were determined in accordance with the following definitions (Table 5):

Medical Only/Non-Compensable
Claim: a worker experienced
symptoms that he/she believes occurred
from exposure on-the-job and seeks
medical evaluation. The physician finds
the symptoms related to the exposure
and there is objective evidence of injury.
Therefore, the claim is allowed and
medical evaluation and any follow-up
medical care/treatment costs are paid.
The employee misses less than three
days of work. These lost workdays are
not reimbursed to the employee.

# **Time Loss/Compensable Claim:**

A worker has an allowable claim and misses more than three days of work immediately following an exposure on the job. The worker is paid a portion of salary while unable to work. All related medical costs are covered.

Rejected Claims: Initial diagnostic and evaluation medical costs are covered but the claim is rejected because objective evidence is lacking to relate the symptoms to the workplace exposure. Many claims are rejected because the symptoms have resolved by the time treatment is obtained; there is no objective evidence of injury; or, exposure cannot be confirmed or documented. A rejected status prevents the worker from reopening a claimbased on original symptoms. Costs of initial medical visits are usually paid.

**Pending:** Additional information is being collected on the claim before a determination can be made.

**Kept on Salary:** The employer elects to pay the claimant's salary instead of L&I paying time loss payments while the employee is recovering from an injury or illness.

Table 5 Status of L&I Claims Related to Pesticides 1997-2001

Claim Type	19	97	19	98	19	99	20	000	20	001
Medical Only/ noncompensable	108	46%	155	58%	107	58%	115	64%	75	58%
Time loss/ compensable	14	6%	11	4%	11	6%	11	6%	8	6%
Rejected	101	43%	100	37%	63	34%	52	29%	45	35%
Pending/Unknown	12	5%	2	1%	1	1%	2	1%		
Kept on salary		1	1		1	1%	-		1	1%
Total	2	35	2	69	18	83	1	80	1	29

# **Department of Ecology**

The Department of Ecology Spill
Response Program maintains a
database to track pesticide-related
complaints reported to the department.
The agency uses the data to determine
where additional education is necessary
to reduce pesticide impacts on human
health and the environment.

In 2001, Ecology reported a reduction in pesticide-related complaints involving threats to air, water and/or soil. Of the 35 complaints received, 15 were investigated by the agency. Three of the 15 investigated complaints involved a combination of several chemicals containing at least one pesticide.

Twelve counties reported complaints. The majority of complaints, 32 (91%) came from private citizens and three came from other sources. Six of the complaints were referred to the Toxics Cleanup Program for further assessment. Pesticide-contaminated sites undergoing evaluation and/or remediation are not included in these data.

Ecology responded within 24 hours in 11 (73%) incidents. All investigated complaints handled by Ecology were resolved and closed in 2001. Of the 35 complaints received by Ecology, 14 occurred in the agricultural

environment and were referred to the Washington State Department of Agriculture (WSDA), one was jointly investigated by WSDA and Ecology; three were in the commercial industrial environment, and three stemmed from residential activities.

After Ecology's Emergency Spill Response Program responds and stabilizes the initial emergency, it will close the case if no long-term impacts are encountered, refer it to another program within the agency if a long-term impact affects one of the mediums regulated by Ecology, or refer the complaint to another state or local agency that can more directly manage the situation. In 2001, Ecology referred 17 (49%) complaints to other agencies.

Three (9%) were not investigated due to lack of resources and determination that they were not emergencies.

Five cases resulted in potential exposure to humans, one near a school. Two allergic reactions were documented. Environmental impacts were documented in 12 cases, three complaints could not be substantiated, eight required some form of cleanup or removal of materials, and one is now a formal "remedial" site under Ecology's Toxics Cleanup Program.

Three situations resulted in a Notice of Violation. Two were referred to the Washington State Department of Transportation and four were referred to local governments' public works departments.

Table 6 shows the number of pesticide complaints by type for 2000 and 2001.

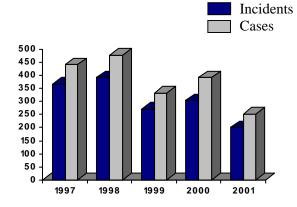
Table 6 Department of Ecology Pesticide Complaints 2000 - 2001

Type of complaint	2000	2001
Pesticides threatening ground or surface water	20 (32%)	11 (31%)
Pesticide disposal or waste concern	14 (22%)	14 (40%)
Spills and fires	10 (16%)	1 (3%)
Unsafe pesticide storage or handling	13 (20%)	6 (17%)
Other or unknown	6 (10%)	3 (9%)
Total	63 (100%)	35 (100%)

# **Department of Health**

DOH is required to investigate suspected pesticide illnesses reported by health care providers. DOH also identifies pesticide exposures from L&I, WPC and WSDA. In 2001, DOH investigated 200 reported incidents of suspected acute pesticide-related illnesses involving 250 individuals-cases (Figure 1). An incident may involve more than one case.

Figure 1 Reported Incidents and Cases 1997 - 2001



DOH responded to 87 percent of the incidents within 24 hours and to 92 percent within 48 hours. Reports of suspected pesticide-related illness were received from L&I (45%), WPC (26%), WSDA (18%), health care providers (3%) and others (8%).

### **Classification of Cases**

DOH classifies each case based on its determination of how likely the symptoms were related to pesticide exposure.

After investigation of the 250 total cases, DOH classified 120 (48%) as having signs and/or symptoms definitely, probably, or possibly (DPP) related to pesticide exposure. The remaining 130 cases were classified as suspicious, unlikely, insufficient information, asymptomatic or unrelated (Table 7).

# Severity

Prior to year 2000, case severity was determined using the DOH classification.

When DOH upgraded the Pesticide Incident data system in 2002, cases were classified using the NIOSH severity matrix. Therefore, severity data may only be compared for the years 2000 and 2001.

There were no life-threatening pesticide illnesses and no deaths reported in 2001 (Table 7). Of the 120 DPP cases, 119 (99%) were classified as mild. In 2000, 199 of 203 (98%) DPP cases had mild medical outcomes. The mild category includes transient and spontaneously resolving symptoms such as abdominal pain, nausea, vomiting, shortness of breath, headache, dizziness and skin or eye irritation.

Table 7 Severity of Reported Pesticide Cases by NIOSH Classification 2001

Findings	Severity*								
	No symptoms	Mild	Moderate	Severe	Death	Total			
Definite	0	20	1	0	0	21			
Probable	0	51	0	0	0	51			
Possible	0	47	0	0	0	48			
Suspicious	0	35	1	0	0	36			
Unlikely	0	23	0	0	0	23			
Insufficient Info	1	37	1	1	0	38			
Asymptomatic	8	0	0	0	0	8			
Unrelated	10	14	0	1	0	25			
Total	19	227	3	2	0	250			

<sup>\*</sup>Full definitions for the severity classification are in the 2002 PIRT Annual Report available under *Reports Published by Department of Health* at: www.doh.wa.gov/Publicat/Publications.htm

# Occupational Cases of Pesticide Related Illness

Of the 120 cases classified as definite, probable or possible pesticide exposures, 83 occurred while on-the-job. Thirty-four of the 83 occupational DPP cases involved agricultural workers and 9 were non-agricultural workers exposed to an agricultural drift. (Table 8). Forty were non-agricultural work exposures.

Table 8 Occupational Agricultural and Non-agricultural DPP cases 1997-2001

Year	Agri.	Non-	Total	Total				
		Agri.	Осср	cases				
1997	79	66	145	212				
	(37%)	(31%)	(68%)	(100%)				
1998	88	56	144	213				
	(41%)	(26%)	(67%)	(100%)				
1999	48	44	92	140				
	(34%)	(31%)	(65%)	(100%)				
2000	60	55	115	203				
	(30%)	(27%)	(57%)	(100%)				
2001	43	40	83	120				
	(36%)	(33%)	(69%)	(100%)				

Twenty-seven (63%) of the 43 DPP exposures related to agriculture occurred in the tree fruit industry. One case occurred in the poultry industry. The remaining cases occurred in root, grain, hops and mint crops.

The type of exposure for occupational cases included pesticide spray (28), drift (24), indoor air (13) and direct contact as in exposure to a spill or leaking equipment (11). Residues on treated surfaces such as plants, carpets, or animals were responsible for 13 cases. (A case may have more than one type of exposure.)

Of the 40 non-agricultural, occupational cases, 11 occurred on railways, roadways or in private vehicles. Eleven occurred in offices or retail businesses. The rest occurred in residential buildings (6), residential institutions (5), manufacturing (5) or schools (2).

# Non-Occupational Cases of Pesticide Related Illness

There were 36 cases (DPP) classified as non-occupational pesticide illness. Twenty-seven individuals (75%) were exposed while at residences. Seventeen (47%) of the 36 non-occupational exposures were from applications by non-licensed persons and occurred at residences. Fifteen (42%) of the 36 cases were individuals exposed to agricultural applications. Ten cases were related to landscaping or weed applications.

## **Incidents Involving Children**

Twenty-nine (12%) of the total 250 reported cases were 18 years of age and younger. Seven (24%) of the 29 cases were determined to be definitely,

probably or possibly related to pesticide exposure. This is significantly less than the number of children with DPP exposures in 2000 (31). Three of the seven DPP cases were related to agricultural applications. Of the three, two were on a farm and one was at school. All four non-agricultural exposures were at home. One child was exposed while playing with pesticide granules, one sprayed insect-repellant into his eyes, one had an eye exposure to lice shampoo and one chewed on a flea collar.

Of the seven DPP cases, 4 were under the age of six; one was seven, one was twelve and one was 15. The 15 year old was employed at the time of exposure.

## **DOH Summary**

In 2001, pesticide incidents reported to DOH decreased by 34% from 302 in 2000 to 200 in 2001.

DOH is encouraged by the decline in the reported number of pesticide-related cases and the mild severity of most reported illnesses. DOH is currently assessing (with a grant from NIOSH) whether the decline in reports reflects a true decline in incidents or a decline in reporting. DOH has conducted focus groups with farm workers to understand barriers to their seeking medical care and is currently assessing underreporting by health care providers.

# **Washington Poison Center**

In 2001, the Washington Poison Center (WPC) received 95,983 statewide calls. Two percent (2,171) of these calls were related to pesticides (Table 9).

Table 9 WPC Pesticide Calls 2000-2001

Pesticide	2000	2001
Fungicide	99	94
Fumigants	0	4
Herbicide	453	404
Insecticide/Repellent	1,330	1,222
Moth repellent	50	53
Rodenticide	394	398
Total pesticide	2,326	2,171
% of total WPC calls	2%	2%
Total WPC calls	118,404	95,983

The number of WPC pesticide-related calls has steadily decreased from a high of 5,231 in 1990 to 2,171 in 2001. Increased education and awareness of risks by the public may have contributed to the decrease in calls. Easy access to pesticide information on the internet may also have contributed.

Pesticide poisonings are a reportable condition in Washington State (WAC 246-100-101). WPC reports all calls regarding patients exposed to pesticides and seen by a health care provider to DOH. Of the 2,171 pesticide-related calls, 152 individuals reported signs and/or symptoms of pesticide illness or

Table 10 WPC Pesticide Calls by Age 2001

Pesticide Type	<6 years old	6-19 years old	Total Human Exposure Calls
Fungicide	19	9	94
Herbicide	127	49	404
Insecticide	384	158	1,132
Insect repellent	52	22	90
Moth repellent	26	6	53
Rodenticide	291	22	398
Total	899	266	2,171

experienced a pesticide exposure that potentially could result in development of symptoms. The 153 cases were reported to DOH.

Of the 152 referrals, 84 did not meet the DOH criteria for investigation in that the exposure had occurred more than 3 months before the report, no exposure-health effect relationship seemed to be present, or there was insufficient information to substantiate actual pesticide exposure.

DOH investigated the remaining 54 incidents involving 68 individuals. Three incidents involved more than one person. One incident at a day care facility accounted for 12 exposures. DOH classified 30 of the 68 pesticide exposures as definitely (8), probably (5), possibly (17) related to the pesticide exposure.

The majority of the 68 cases had mild or no symptoms (64), 2 had moderate symptoms and 2 had severe symptoms. There were no accidental, lifethreatening, pesticide-related exposures reported.

As in previous years, the majority (94%) of pesticide-related calls to WPC involved accidental exposure.

Forty-one percent (899) of the WPC pesticide calls involved children less than six years of age. Of the 899 calls, 17 were reported to DOH as the children were symptomatic or were potentially exposed to a pesticide. Of the 17 children, DOH determined that two were definitely related to pesticide exposure and one was possibly related, Table 10 illustrates WPC calls by pesticide type for the different age groups.

Half (52%) of the pesticide cases involved insecticides and 19 percent involved herbicides.

# **WPC Summary**

In 2001, the number of pesticide-related calls to the Washington Poison Center decreased by seven percent from the previous year. This decrease reflects the over-all decrease in WPC calls. The percentage of pesticide-related calls to total WPC calls has remained at two percent since 1994. Most of the decrease (155) involved insecticide (101) and herbicide (49) calls.